

QR519 TRANSMISSION SERVICE MANUAL

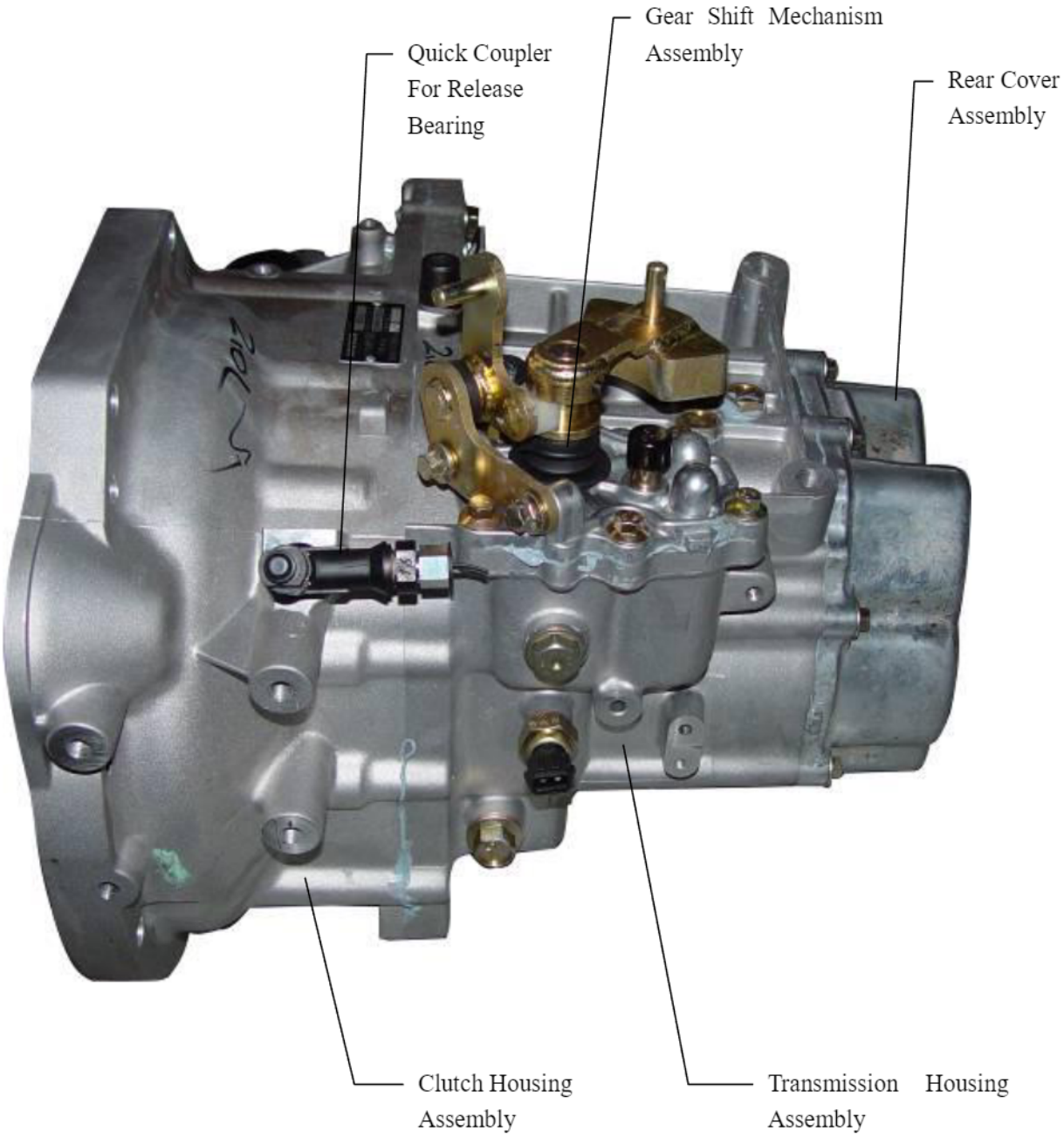
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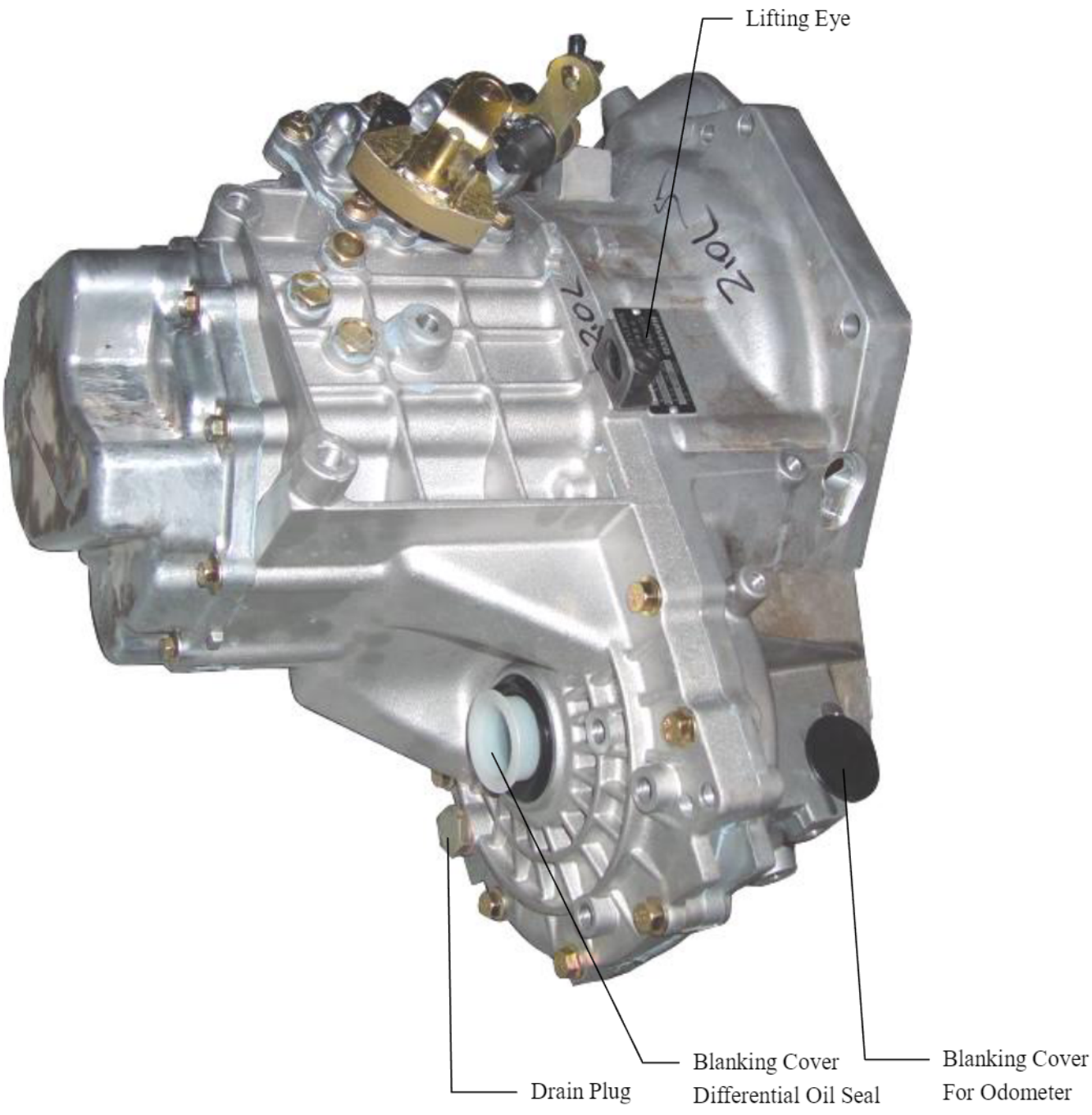
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I OUTSIDE VIEW AND FUNCTIONAL DIAGRAM OF ASSEMBLY

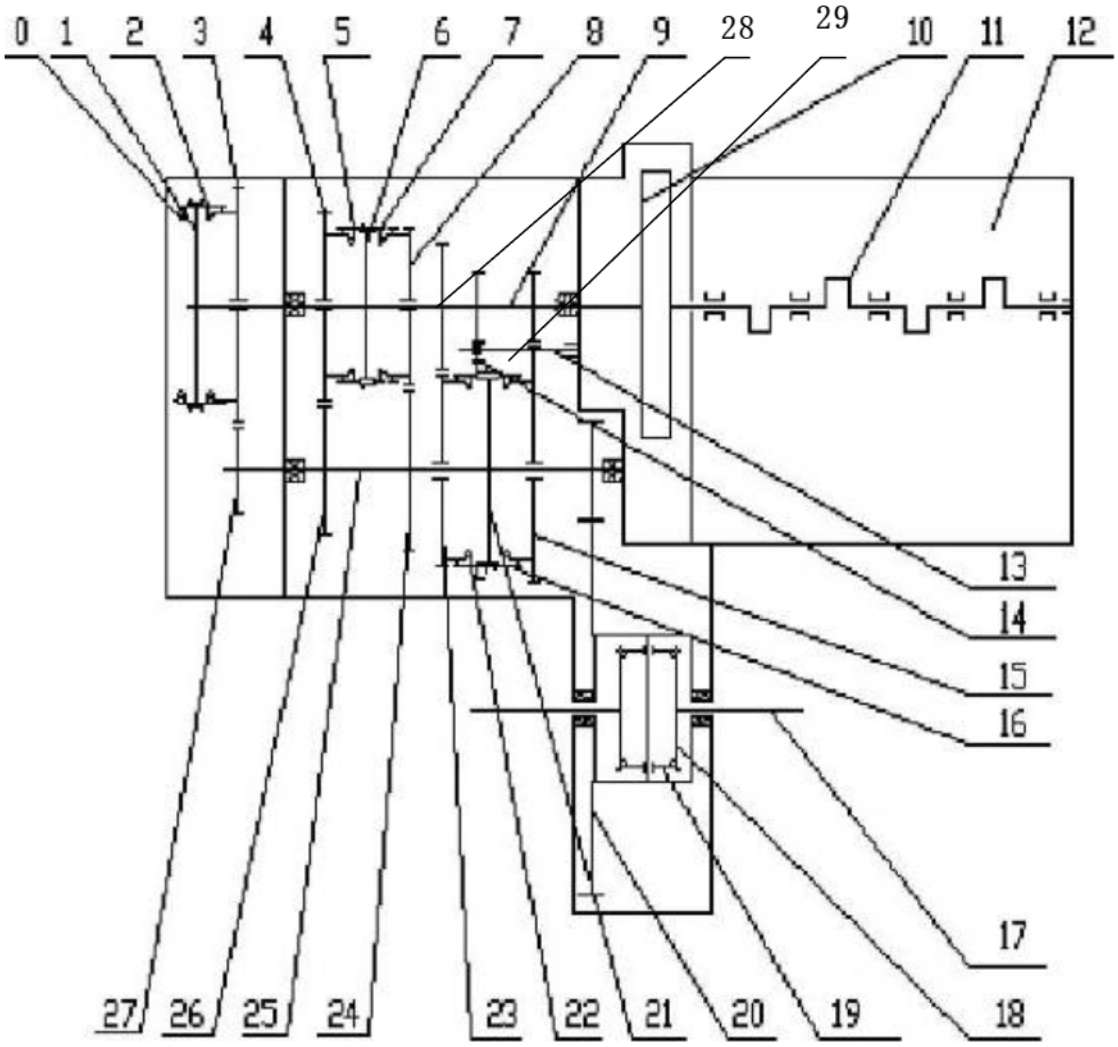


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II FUNCTIONAL DIAGRAM OF ASSEMBLY

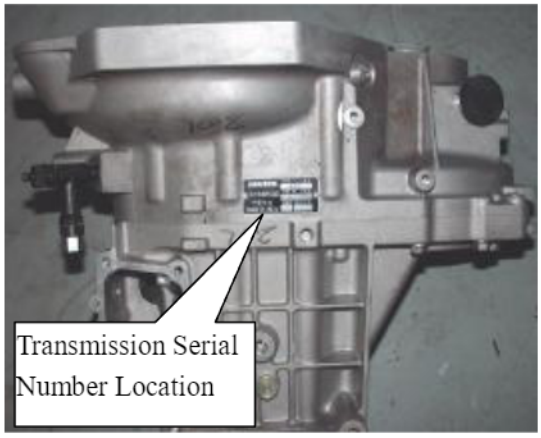


0. Synchronizer Ring -Reverse Synchronizer
1. 5th Synchronizer
2. 5th Synchronizer Ring
3. 5th Driving Gear
4. 4th Driving Gear
5. 4th Synchronizer Ring
6. 3rd-4th Synchronizer
7. 3rd Synchronizer Ring
8. 3rd Driving Gear
9. Input Shaft
10. Clutch
11. Crankshaft
12. Engine
13. Idler Gear Shaft
14. Idler Gear
15. 1st Driven Gear
16. 1st Synchronizer Ring
17. Axle Shaft
18. Side Gear
19. Planetary Gear
20. Final Drive Driven Gear
21. 1st-2nd Synchronizer
22. 2nd Synchronizer Ring
23. 2nd Driven Gear
24. 3rd Driven Gear
25. Output Shaft
26. 4th Driven Gear
27. 5th Driven Gear
28. 2nd Driving Gear
29. 1st Driving Gear

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III TRANSMISSION SERIAL NUMBER

The transmission serial number is inscribed on the transmission nameplate close to the gear shift mechanism on top of the transmission, i.e. the third row of data on the nameplate (as shown in the right-hand figure).



IV TECHNICAL PARAMETERS

Parameter \ Model		QR519MHA	
Gear ratio (Z2:Z1)	Final transmission ratio	67：16=4.2	
	1st gear	39：11=3.546	
	2nd gear	43：21=2.048	
	3rd gear	35：26=1.346	
	4th gear	36：35=0.972	
	5th gear	38：31=0.816	
	Reverse gear	40：12=3.333	
Transmission oil type		API 75W-90 GL-4 gear oil	
Transmission oil volume		2.1L	
Rated torque		190 N·m	
Rated speed		5500 r/min	
Rated power		95 KW	
Center distance		72 mm	
Input shaft spline		Number of teeth	18
		Modulus	1.0583
		Pressure angle	37.5 °
		Major diameter	$\varphi 20.1^{0}_{-0.25}$
		Minor diameter	$\varphi 17.67^{0}_{0.16}$
Outline dimensions		388.2X474.6X263.5	

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V TIGHTENING TORQUE FOR ASSEMBLY

Name	Torque for assembly (N·M)
Differential bolt M10X1.25	93.2 – 104.9
Drain plug assembly M18X1.5-6h	29.4 – 49
Oil-limiting plug M18X1.5-6h	29.4 – 49
Bolt for oil retainer & oil-receiving trough assembly M6 X12	6.9 – 9.8
5th-reverse return spring seat retainer bolt M6 X12	6.9 – 9.8
Reverse shift arm bracket bolt M8	14.7 – 21.5
Screw plug for fixing 1st-2nd, 3rd-4th and 5th-reverse fork shafts M10X1.25-6h	6.9 – 9.8
Fixing bolt for idler gear shaft M8X1.25-6h	22 – 26
Assembly bolt for clutch and transmission housings M8X40	14.7 – 21.5
Socket head cap screw for rear bearing retainer M6X1-6h	9.5 – 12
Stud bolt for left mounting bracket M10	19.6 – 29
Gland nut for 5th driven gear M16X1.5-6h	88.9 – 108.5
Friction ball blanking cover for 5th shift fork M10X1-6h	5.8 – 8.8
Bolt for connecting rear cover and transmission housing M6-6h	6.9 – 9.8
Clutch release lever bolt M8X35	29.4 – 49
Bolt for connecting gearshift mechanism and transmission housings M8X1.25-6h	14.7 – 21.5
Bolt for connecting gear selector arm and its bracket M8X75	14.7 – 21.5
Backup lamp switch assembly M14X1.5-8g	29.4 – 49
Odometer fixing bolt M6X16	6.9 – 9.8
Blanking cover for multifunctional switch sample block M8X1.25-6h	14.7 – 21.5
Lock screw for reverse gear M8X1.25-6h	14.7 – 21.5
Stud bolt for front end surface of clutch housing M10X35	19.6 – 29
Assembly stud bolt for clutch and transmission housings M8	14.7 – 21.5
Stud bolt for connecting rear cover and transmission housing M6-6h	6.9 – 9.8
Fixing bolt for gearshift mechanism M10X1.25-6h	19.6 – 29

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VI DISASSEMBLY PROCEDURE & NOTICE

DISASSEMBLY OF TRANSMISSION ASSEMBLY

1. Place the transmission on the workbench, screw off the oil drain plug and then rotate the transmission to drain the transmission oil as possible as you can;

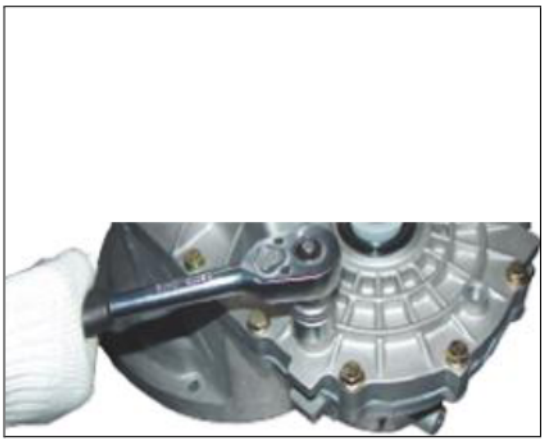


Figure 1

2. Undo the clip for fastening the release bearing (it is unnecessary to take it off);

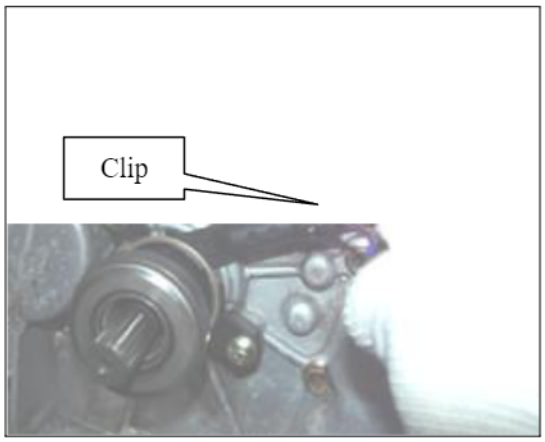


Figure 2

3. Disassemble the hydraulic release bearing seat and the quick coupler for release bearing;



Figure 3

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4. Release joint assembly as shown in the figure;

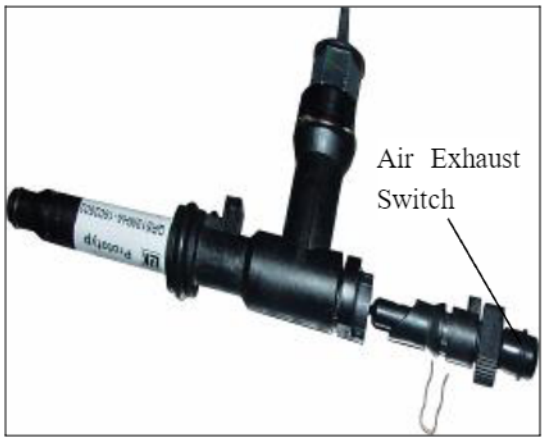


Figure 4

5. Disassemble the release bearing bolts and remove the release bearing;



Figure 5

6. Screw off the rear cover bolts and remove the rear cover;



Figure 6

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7. Directly take out the reverse synchronizer ring;

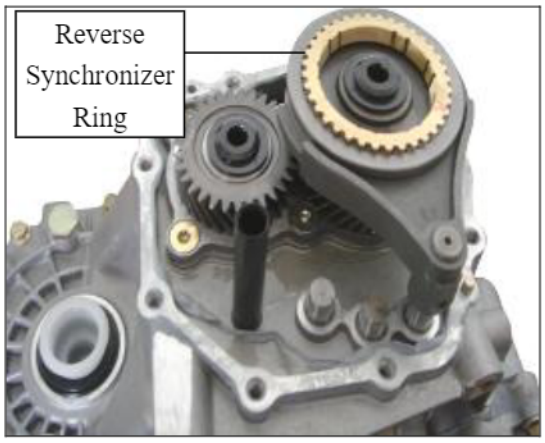


Figure 7

8. Engage some forward gear, and then remove the elastic lock pin by using a punch before moving down the 5th shift fork and gear. Once the input shaft interlocks with the output shaft, use a torque wrench to screw off the tight nut for the 5th driven gear counterclockwise.

(**Note:** alternatively, you can engage the 5th gear and put a thin copper bar (or any other low-hardness metal bar) between the 5th driving and driven gears, and then use a torque wrench to screw off the tight nut for the 5th driven gear counterclockwise.)

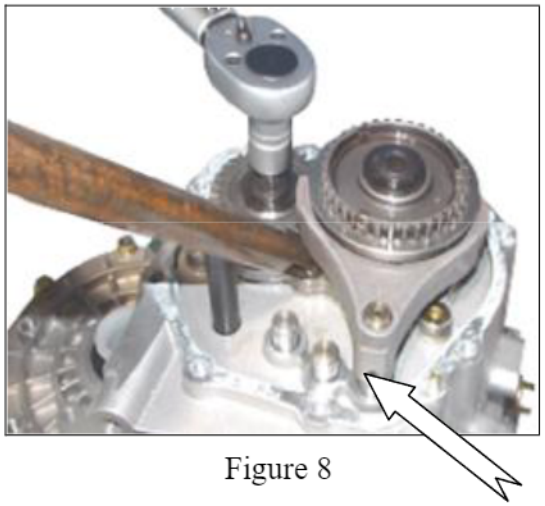


Figure 8

9. Similarly, use the torque wrench to screw off the tight nut for the 5th driving gear counterclockwise;



Figure 9

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10. Remove the elastic lock pin with the punch; engage the reverse gear and take out the 5th-reverse shift fork;

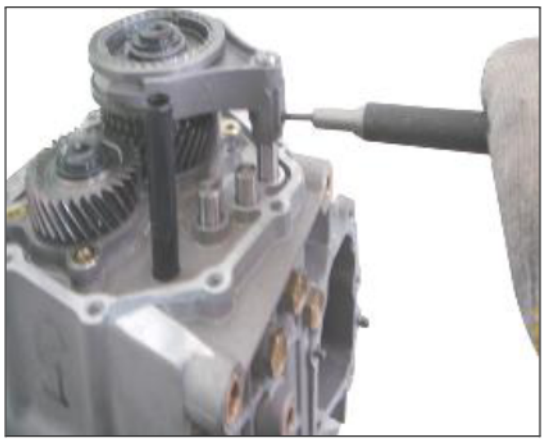


Figure 10

11. Remove the 5th synchronizer along with the 5th driving and driven gears;



Figure 11

12. Remove the needle roller bearing;

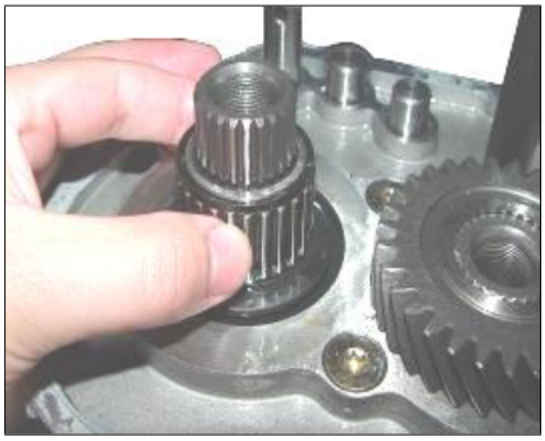


Figure 12

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13. Screw off the bearing retainer bolts with a hexagonal socket wrench and remove the bearing retainer;



Figure 13

14. Take out the adjusting washer for rear output shaft bearing by using a caliper;



Figure 14

15. Similarly, take out the adjusting washer for rear input shaft bearing;



Figure 15

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16. Screw off the gearshift mechanism housing bolts;

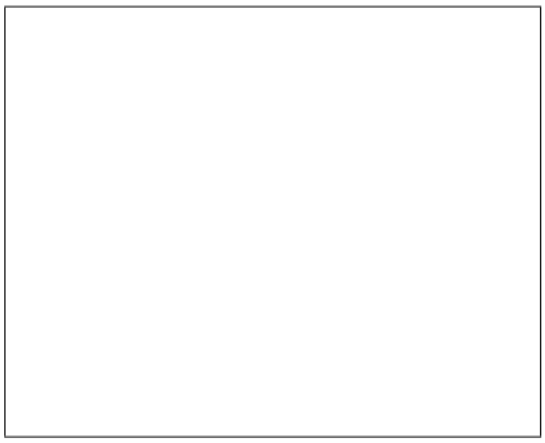


Figure 16

17. Screw off the shifting finger locating base;



Figure 17

18. Remove the backup lamp switch; now, you can directly pull the control mechanism assembly out of the transmission housing;



Figure 18

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19. Screw out the three fixing bolts as shown in Figure 19 (1. The 5th/reverse shift fork locating base; 2. The 3rd/4th shift fork locating base; 3. The 1st/2nd shift fork locating base). Note: the bolt to the 1st/2nd shift fork locating base is relatively long;

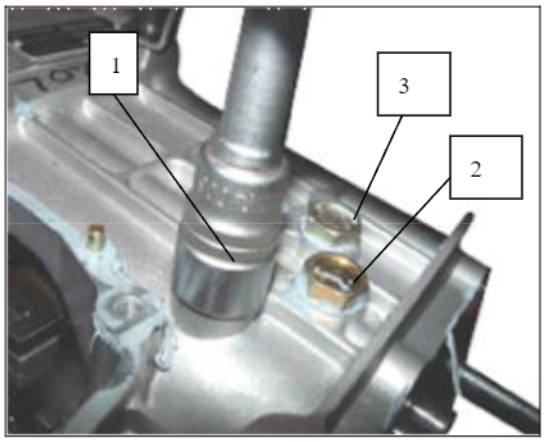


Figure 19

20. Screw off the idler gear shaft fixing screw with the hexagonal socket wrench;

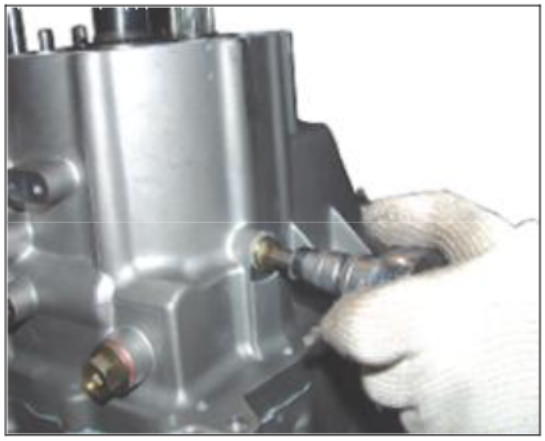


Figure 20

21. Screw off the transmission housing bolts;



Figure 21

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22. Screw off the clutch housing bolts;

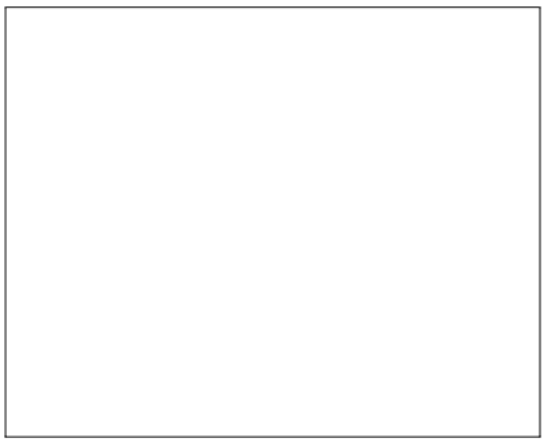


Figure 22

23. Manually lift up the transmission housing so as to suspend the transmission assembly and then use the copper bar to hit the input and output shafts; and remove the transmission housing as well as the 5th collar;



Figure 23

24. Remove the reverse idler gear assembly;

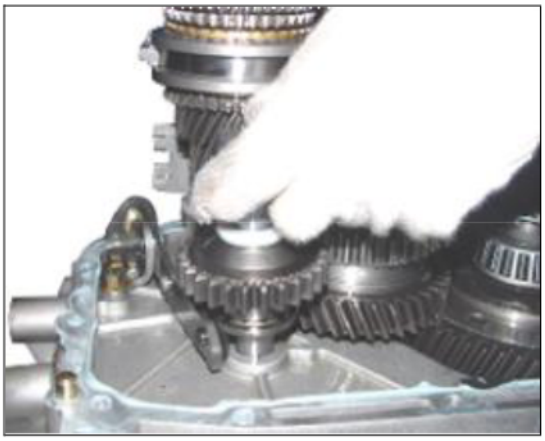


Figure 24

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25. Screw out the reverse shift fork mechanism assembly bolts and remove the reverse shift fork;



Figure 25

26. Remove the split baffle ring with a caliper;



Figure 26

27. Take hold of the input shaft assembly, output shaft assembly, 1st-2nd shift fork, 3rd-4th shift fork and 5th-reverse fork shaft together with your hands and take them out; finally, take out the differential assembly;



Figure 27

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VII EXPLODED VIEW

INPUT SHAFT ASSEMBLY

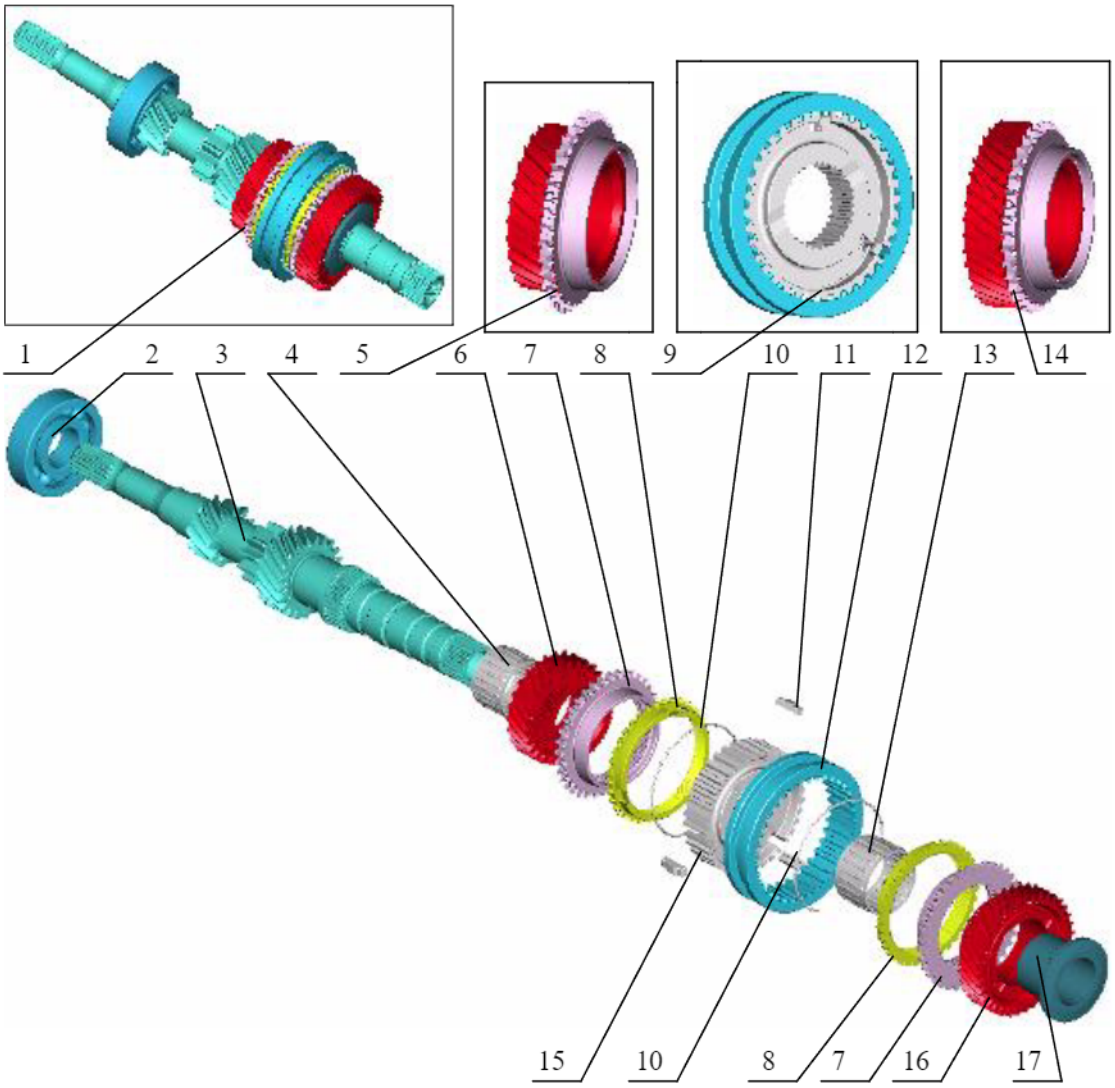


Figure 28

1. Input shaft assembly
2. Front input shaft bearing
3. Input shaft
4. 3rd-5th needle roller bearing
5. 3rd driving gear assembly
6. 3rd driving gear
7. 3rd-4th synchronizer cone
8. Synchronizer ring- 3rd-4th synchronizer
9. 3rd-4th synchronizer assembly
10. Steel wire spring for 3rd-4th synchronizer
11. Guide block for 3rd-4th synchronizer
12. Gear sleeve for 3rd-4th synchronizer
13. 4th gear needle roller bearing
14. 4th driving gear assembly
15. Gear hub for 3rd-4th synchronizer
16. 4th driving gear
17. 4th-collar

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DISASSEMBLY:

If a special tool is available, you can directly use it to disassemble the input shaft assembly. Otherwise, use the detacher to carefully pull out the 4th-collar, 4th driving gear, 4th gear needle roller bearing, 3rd-4th synchronizer assembly and 3rd driving gear in sequence.

In addition, pull out the front input shaft bearing from the front end of input shaft.

NOTICE FOR INSTALLATION:

(1) Clean all components.

(2) Check the input shaft:

① Check whether there is any damage, abnormal wear or lockup of the needle roller bearing's outer-diameter portion to be mounted.

② Check whether there is any damage or wear of the spline.

Check the needle roller bearing – whether the input shaft and gears are correctly assembled, whether the gears can rotate smoothly, and whether there is any part looseness or noise.

Check the 3rd and 4th driving gears:

① Check whether there is any damage or wear on tooth surfaces of helical gear (A in Figure 29) and clutch gear (B in Figure 29).

② Check whether there is any damage, wear or coarsening on the synchronizer's conical surface.

③ Check whether there is any damage or wear on their inner-diameter, front and rear surfaces.

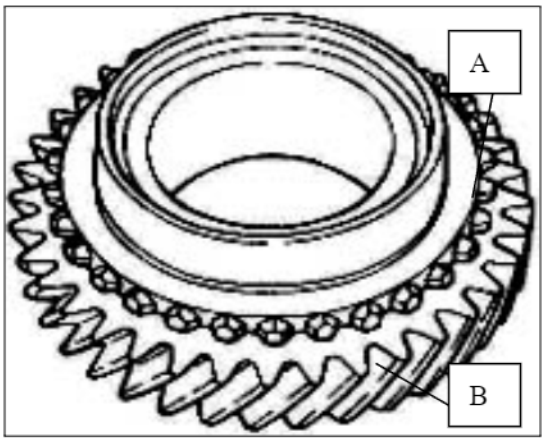


Figure 29

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Check the gear sleeve and gear hub of the 3rd-4th synchronizer:

① Assemble the gear sleeve and gear hub together and check whether they can slide smoothly or whether they are locked up (as shown in Figure 30).

② Check whether there is any damage in the front and rear of the gear sleeve's inner surface.

Note: if it is necessary to replace the gear sleeve or hub, you shall use a new complete set of these components for substitution.

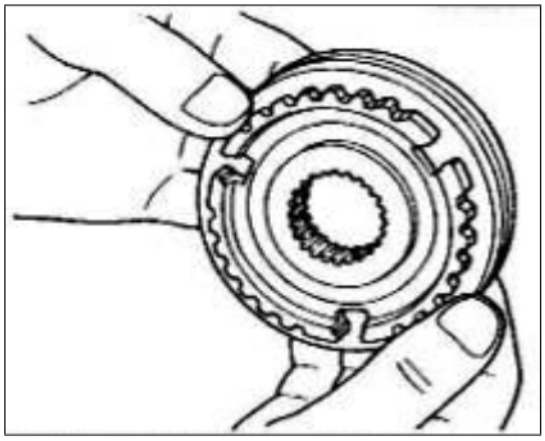


Figure 30

(3) Clean the inner conical surfaces of synchronizer rings by steel wire brush (as shown in Figure 31).

Check whether there is any damage or wear on the gear tooth surfaces of the synchronizer ring, whether there is any damage or wear on the inner-diameter surface of the synchronizer's conical portion, and whether the screw thread is damaged due to crushing.

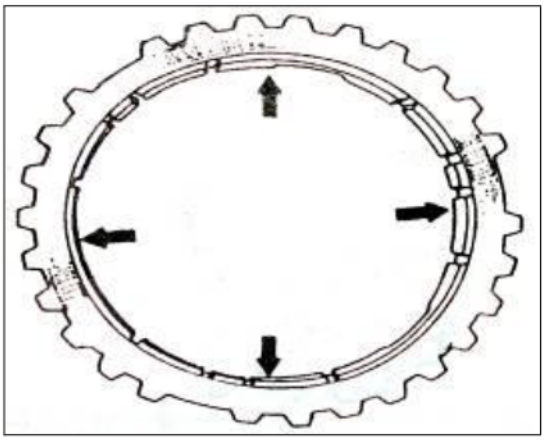


Figure 31

(4) Press the synchronizer rings in turn onto their respective gears' conical surfaces and check the values of the clearance "A". The standard values of A are as shown in the following table (unit: mm):

Synchronizer Ring	Value of A	Wearing Limit
1st-2nd gear	1.10-1.17	0.05
3rd-4th gear	1.35-1.90	0.05
5th gear	1.10-1.17	0.05

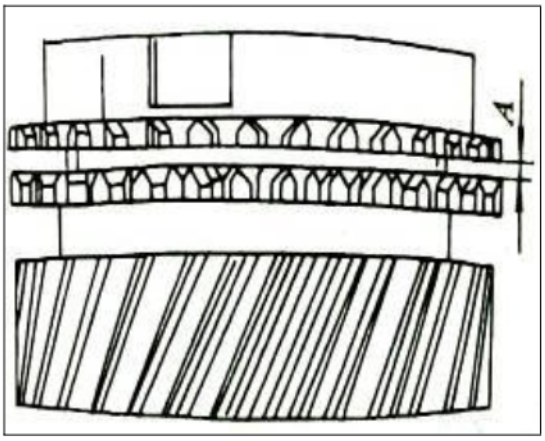


Figure 32

INSTALLATION:

The procedure to assemble the input shaft assembly is opposite to its disassembly procedure.

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OUTPUT SHAFT ASSEMBLY

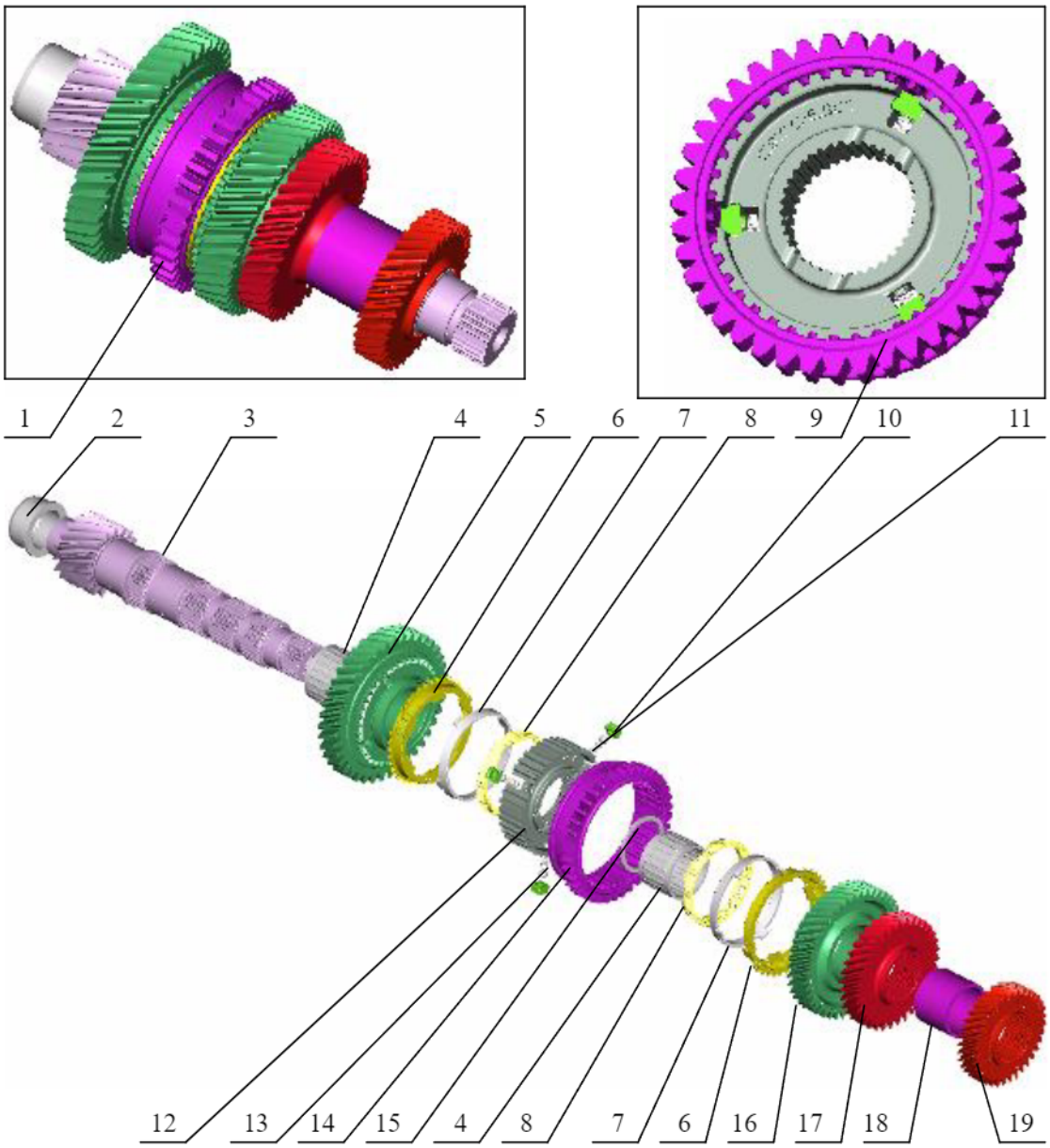


Figure 33

1. Output Shaft Assembly
2. Front Bearing Inner Race for Output Shaft
3. Output Shaft
4. 1st-2nd Needle Roller Bearing
5. 1st Driven Gear
6. 1st-2nd Synchronizer Cone Ring
7. 1st-2nd Synchronizer Ring (Outer)
8. 1st-2nd Synchronizer Ring (Inner)
9. 1st-2nd Synchronizer Assembly
10. Guide Block for 1st-2nd Synchronizer
11. Spring – 1st-2nd Synchronizer
12. Gear Hub – 1st-2nd Synchronizer
13. Ball – 1st-2nd Synchronizer Guide Block
14. Gear Sleeve – 1st-2nd Synchronizer
15. Snap Ring – 1st-2nd Synchronizer Gear Hub
16. 2nd Driven Gear
17. 3rd Driven Gear
18. 3rd-4th Driven Shaft Sleeve
19. 4th Driven Gear

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DISASSEMBLY:

(1) Use a puller to pull out the rear output shaft bearing and the 4th driven gear;

(2) Take out the 3rd-4th driven collar;

(3) Successively take out the 3rd driven gear, 2nd driven gear, 1st/2nd synchronizer cone ring, out synchronizer ring, inner synchronizer ring and 2nd needle roller bearing;

(4) Use a snap ring plier to take out the snap ring for 1st-2nd synchronizer gear hub (as shown in Figure 33);

(5) Pull out the 1st-2nd synchronizer assembly and remove the 1st driven gear and 1st needle roller bearing;

(6) Pull out the front output shaft inner bearing from the front end of output shaft.



Figure 34

NOTICE FOR INSTALLATION:

(1) Clean all the components.

(2) In the same way as for the input shaft, successively check the following items: output shaft, needle roller bearing, 1st driven gear, 2nd driven gear, and 1st-2nd synchronizer gear sleeve and hub.

(3) Check the outer synchronizer ring, inner synchronizer ring and synchronizer cone ring:

① Check whether there is any damage on the tooth surfaces and conical surface.

② Mount the outer and inner synchronizer rings and put them into the state of pressing on the respective gears, and measure the values of clearance "A". If the value of A is less than the corresponding specified limit value, it is

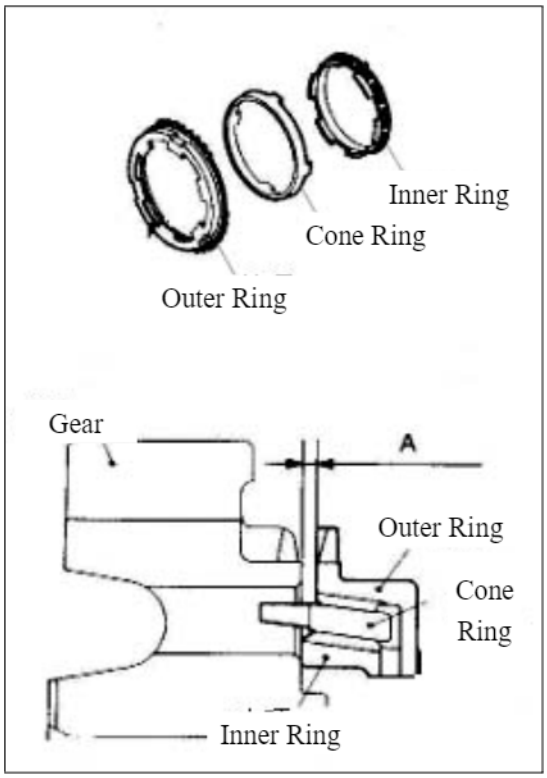


Figure 35

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necessary to change them.

For the specified limit values, refer to the table in Page 15.

Note: if it is necessary to change the outer synchronizer ring, inner synchronizer ring or synchronizer cone ring, you shall use a new complete set of these components for substitution.

INSTALLATION:

The procedure to assemble the output shaft assembly is opposite to its disassembly procedure.

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IDLER GEAR ASSEMBLY

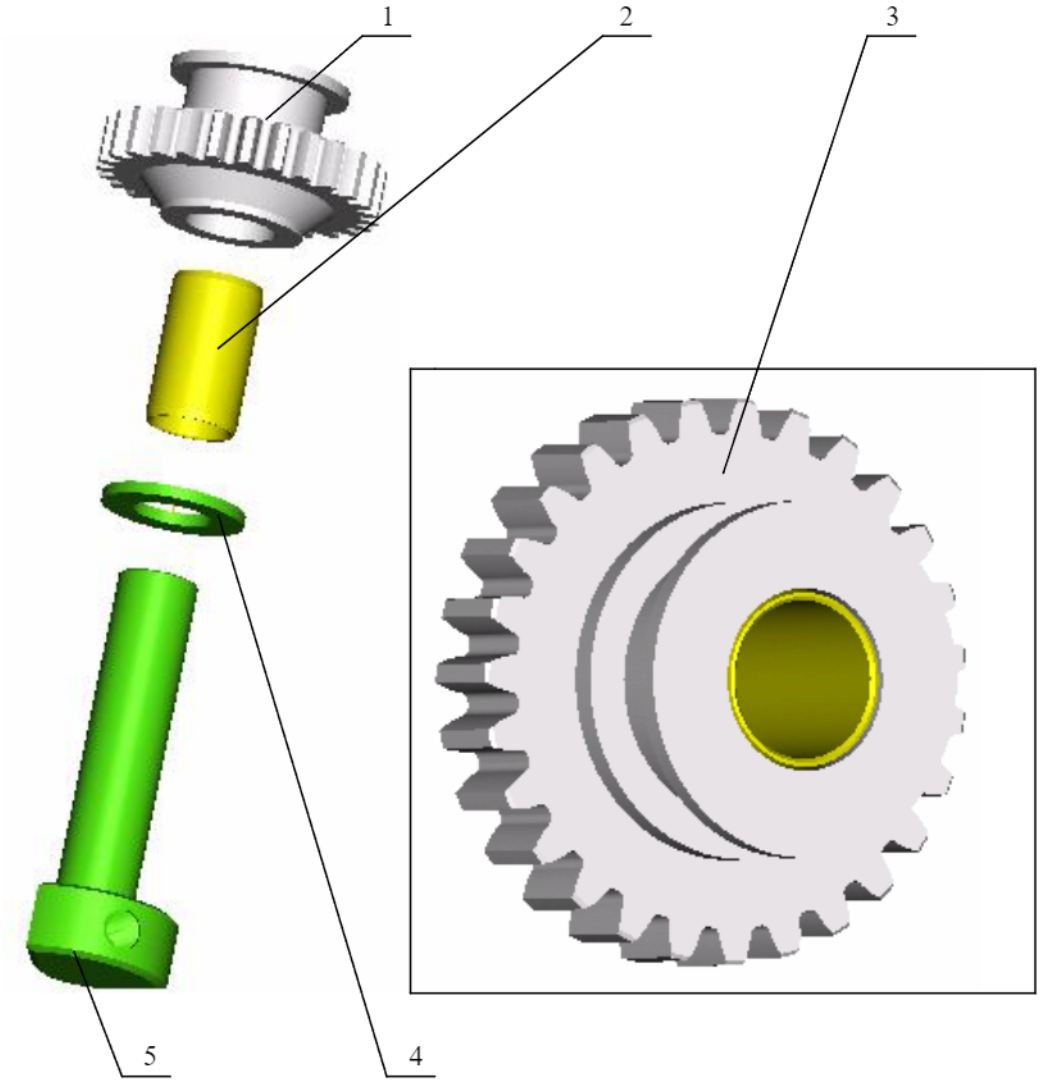


Figure 36

1. Reverse Idler Gear
2. Bushing – Reverse Idler Gear
3. Idler Gear Assembly
4. Idler Gear Gasket
5. Idler Gear Shaft

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REVERSE SHIFT FORK MECHANISM ASSEMBLY

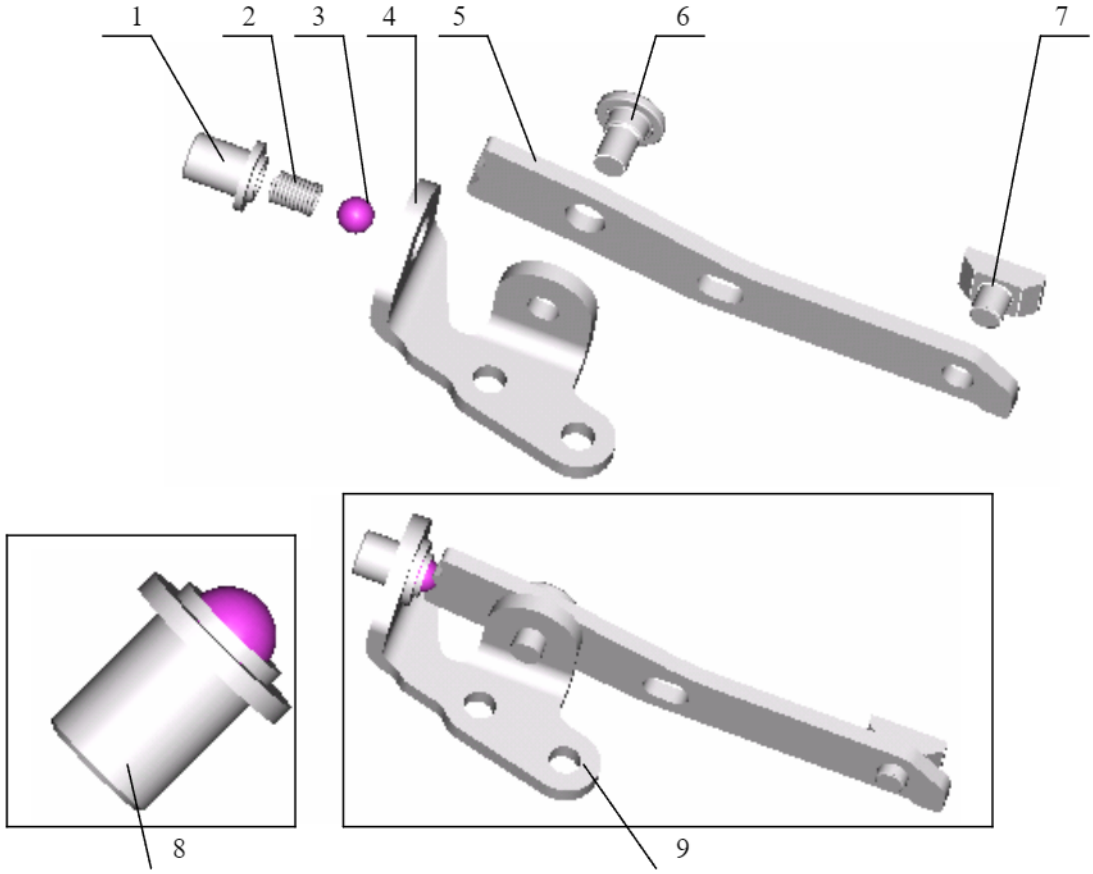


Figure 37

1. Housing for Reverse Locating Base
2. Spring for Reverse Locating Base
3. Ball for Reverse Locating Base
4. Reverse Shift Arm Bracket
5. Reverse Shift Arm
6. Pin Shaft – Reverse Shift Arm Bracket
7. Drive Pin – Idler Gear
8. Reverse Locating Base
9. Reverse Shift Fork Mechanism Assembly

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1ST/2ND SHIFT FORK ASSAMBLY

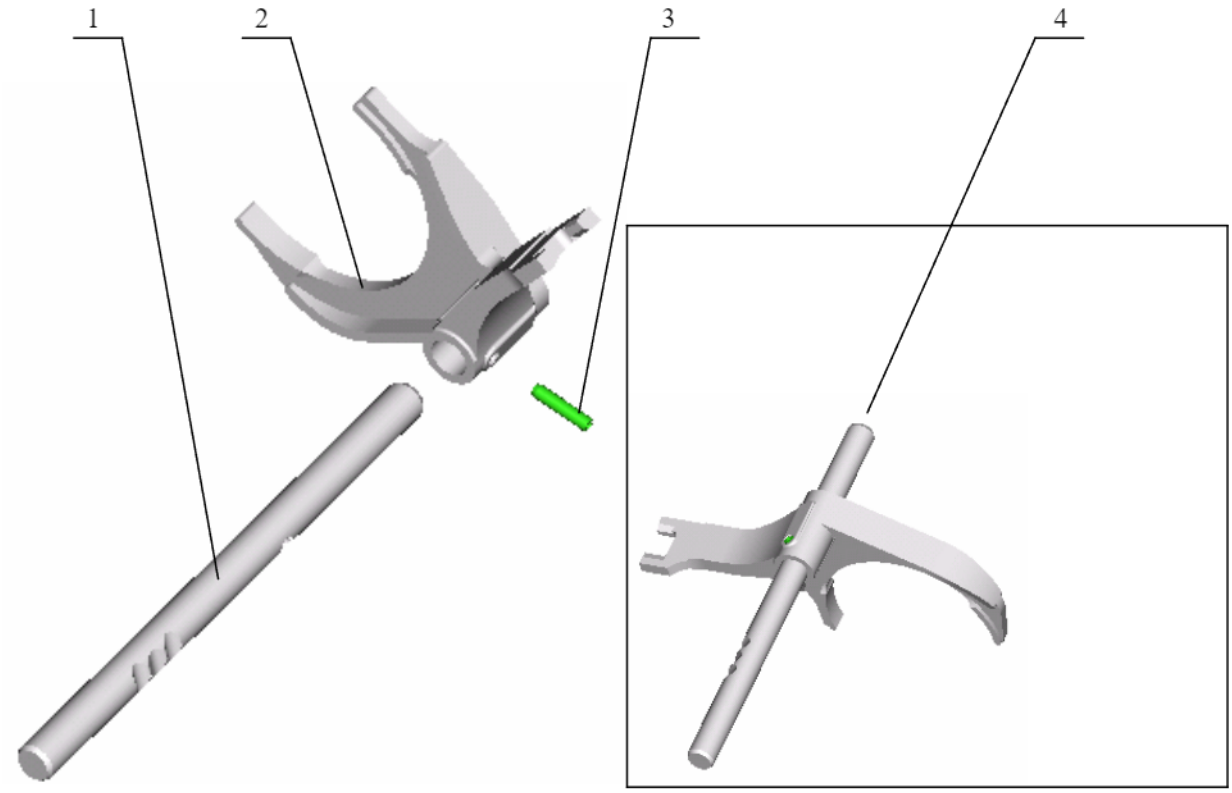


Figure 38

1. 1st-2nd Shift Fork
2. 1st-2nd Fork Shaft
3. Spring Pin
4. 1st-2nd Shift Fork Assembly

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3RD, 4TH, 5TH & REVERSE FORK SHAFT COMPONENTS

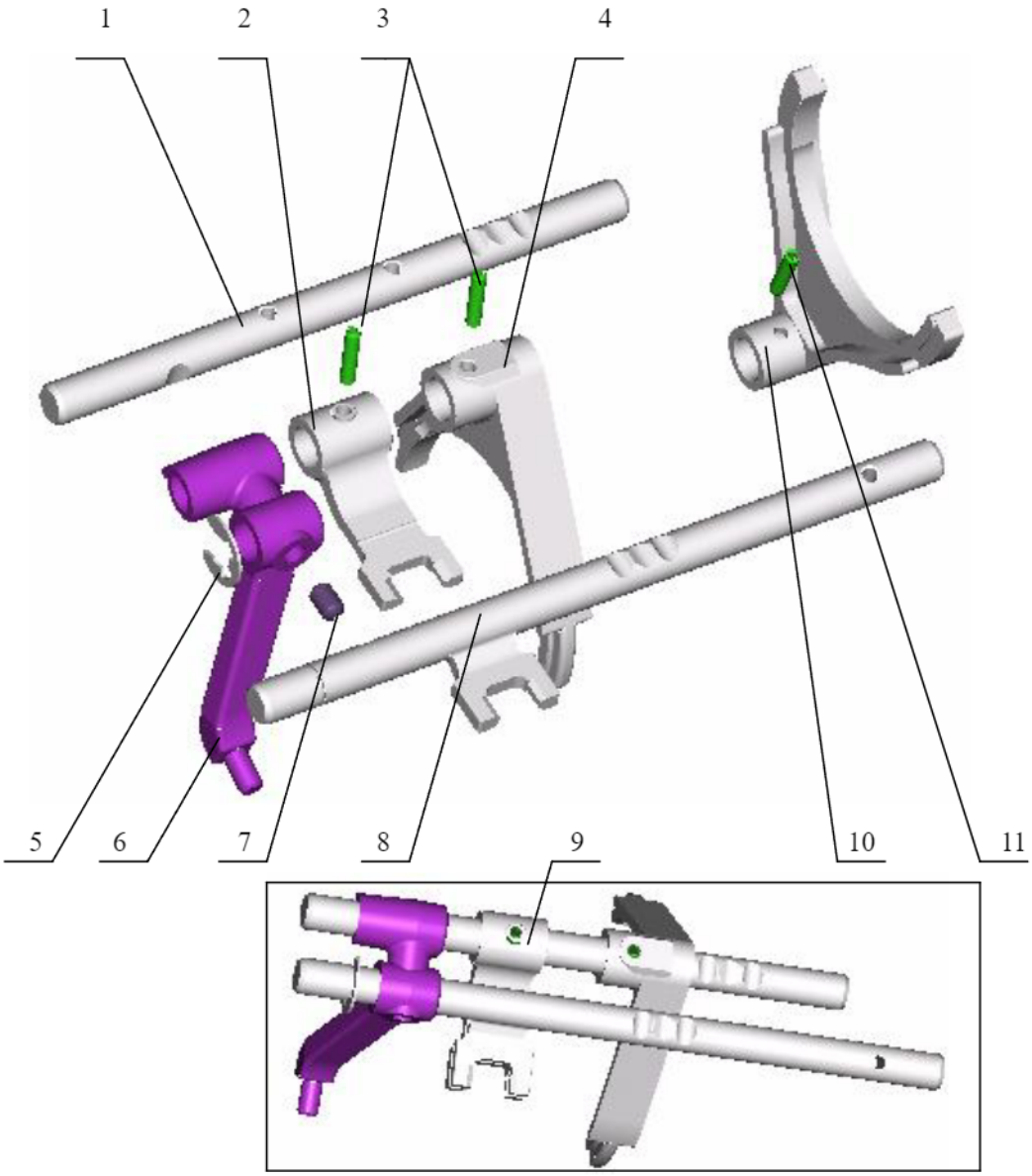


Figure 39

1. 3rd-4th Fork Shaft
2. 3rd-4th Fork Bracket
3. Spring Pin
4. 3rd-4th Shift Fork
5. Split Baffle Ring
6. Reverse Pin
7. Interlock Pin
8. 5th-Reverse Fork Shaft
9. 3rd, 4th, 5th and Reverse Fork Shaft Components
10. 5th-Reverse Shift Fork
11. Spring Pin for Fork Shaft

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GEAR SELECTION & SHIFT MECHANISM ASSEMBLY

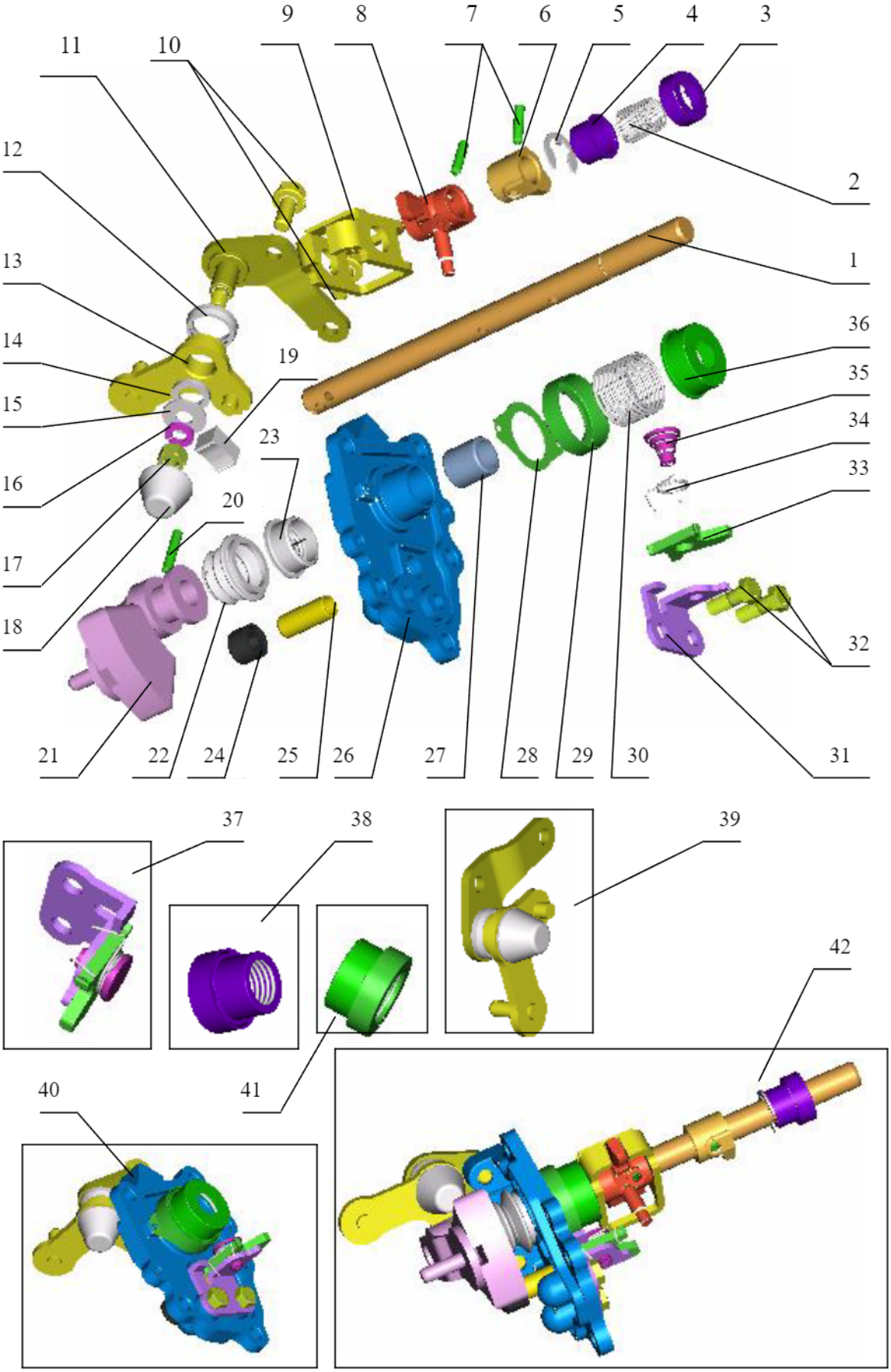


Figure 40

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1. Gear Selection & Shift Shaft
2. 1st-2nd Return Spring
3. Top Base For 1st-2nd Return Spring
4. Bottom Base For 1st-2nd Return Spring
5. Split Baffle Ring –1st-2nd Return Spring Assembly
6. Backup Lamp Switch Gate Block
7. Spring Pin
8. Shift Finger
9. Interlock Plate
10. Selector Lever Bracket Bolt
11. Selector Lever Bracket Assembly
12. Boot –Selector Lever
13. Selector Lever Assembly
14. Small Gasket – Selector Lever
15. Large Gasket – Selector Lever
16. Spring Washer – Selector Lever
17. Nut
18. Sleeve – Selector Lever Nut
19. Slide Block – Selector Lever
20. Spring Pin
21. Selector Lever Assembly
22. Boot –Gear Selection & Shift Shaft
23. Oil Seal –Gear Selection & Shift Shaft
24. Air Duct Cap
25. Air Duct
26. Gear Selection & Shift Mechanism Housing
27. Linear Bearing
28. 5th-Reverse Return Spring Retainer
29. Bottom Base For 5th-Reverse Return Spring
30. 5th-Reverse Return Spring
31. Reverse Lock Plate Bracket
32. Bolts –Reverse Lock Mechanism
33. Reverse Lock Plate
34. Torsion Spring – Reverse Lock Mechanism
35. Pin Shaft – Reverse Lock Mechanism
36. Top Base For 5th-Reverse Return Spring
37. Reverse Lock Mechanism Assembly
38. 1st-2nd Return Spring Assembly
39. Selector Lever & Bracket Assembly
40. Gear Selection & Shift Mechanism Housing Assembly
41. 5th-Reverse Return Spring Assembly
42. Gear Selection & Shift Mechanism Assembly

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NOTICE FOR INSTALLATION:

Press in the linear bearing so that the side of its model number inscribed is on the side of controller housing. Smear the transmission oil onto the oil seal lip.

Transmission oil:

Use hypoid gear oil complying with the API classification GL-4 or above.

SAE 75W~85W

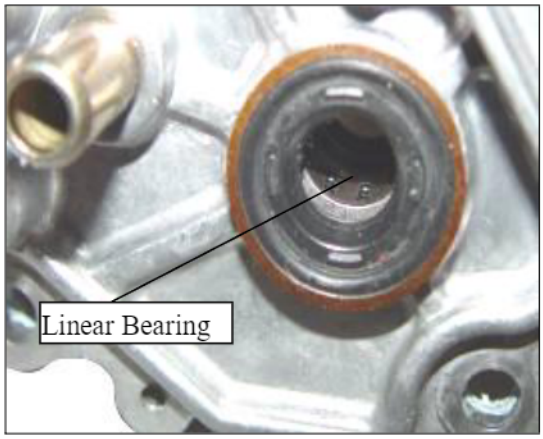


Figure 41

MOUNTING THE AIR VENT:

(1) Smear sealant onto its inserted portion.

Specified sealant: Mobilux EP2

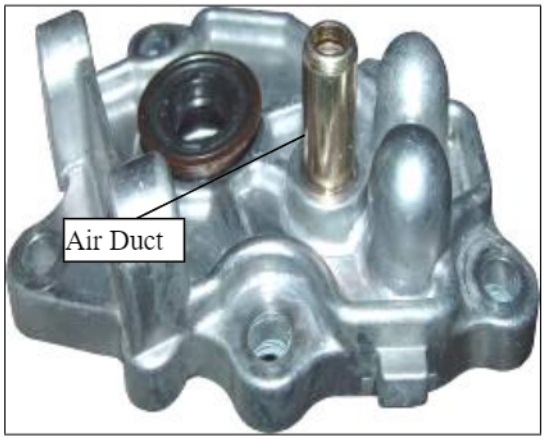


Figure 42

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DIFFERENTIAL ASSEMBLY

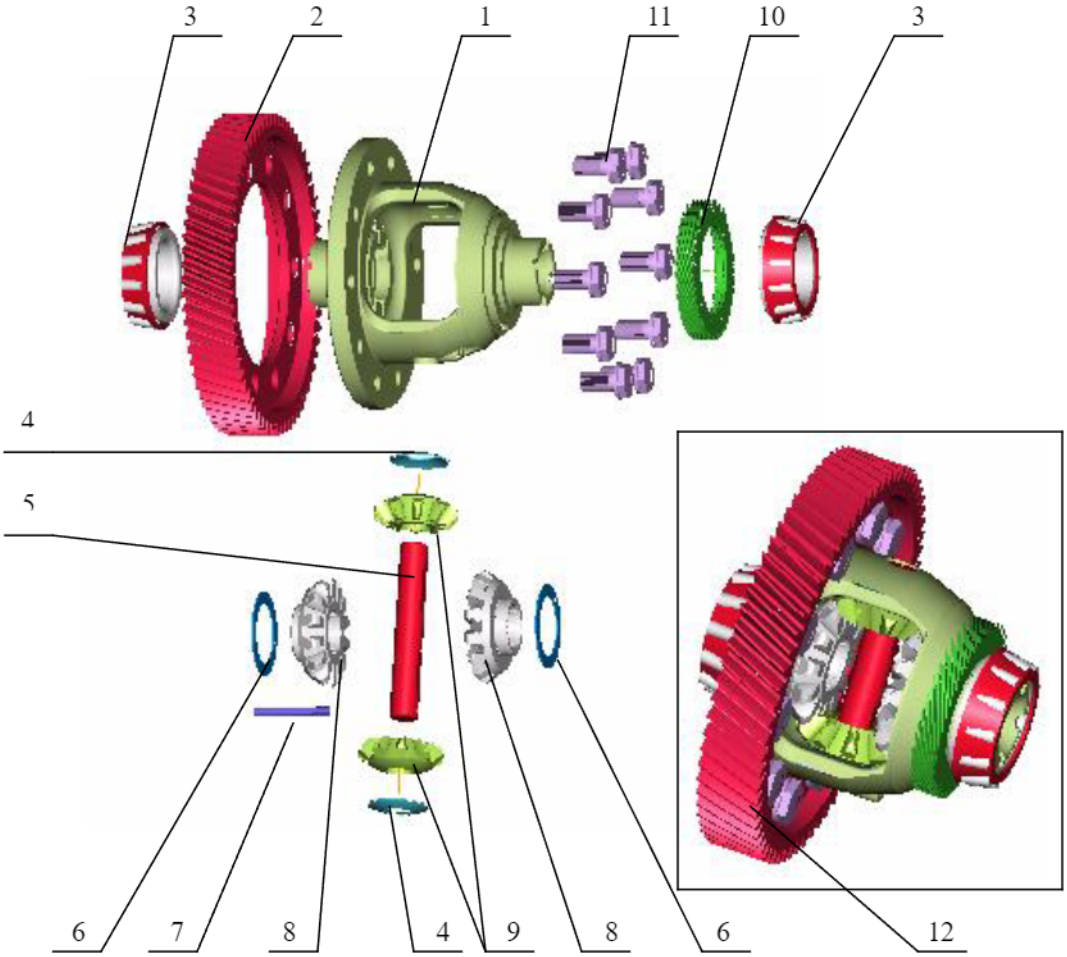


Figure 43

1. Differential Housing
2. Final Drive Driven Gear
3. Front/Rear Differential Bearing
4. Spherical Washer –Planetary Gear
5. Planetary Gear Shaft
6. Adjusting Washer – Side Gear
7. Fixing Pin – Planetary Gear
8. Side Gear
9. Planetary Gear
10. Driving Gear – Odometer
11. Bolts – Final Drive Driven Gear and Differential Housing
12. Differential Assembly

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NOTICE FOR INSTALLATION:

Installation of the adjusting washers, side gears, spherical washers, planetary gears and the planetary gear shaft:

(1) Assemble the adjusting washers respectively on the backs of the side gears and put the side gears in place within the differential.

Remark: the adjusting washer for any new side gear shall have an appropriate thickness (0.93-1.00 mm).

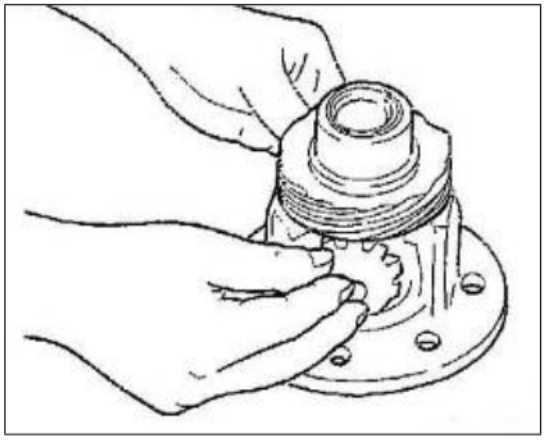


Figure 44

(2) Engage two planetary gears with side gears behind the spherical washers on the backs of the planetary gears. When rotating any of these gears, you shall put it into appropriate place.

(3) Insert the planetary gear shaft.

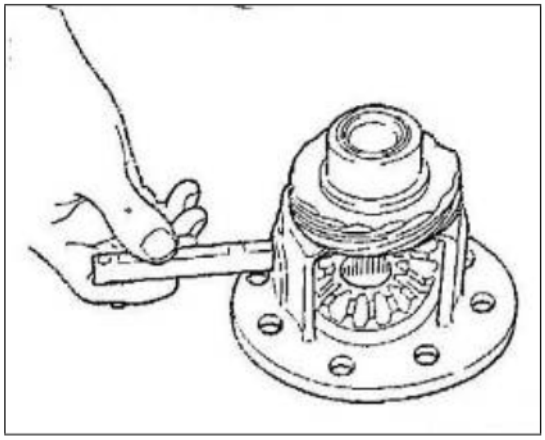


Figure 45

(4) Measure the clearances between side gear and planetary gear.

Standard value: 0.025-0.150 mm

(5) If any measured clearance does not measure up, please select and install the appropriate adjusting washer(s) and then measure the clearances again.

Remark: adjust the clearances on both sides so as for them to be equal.

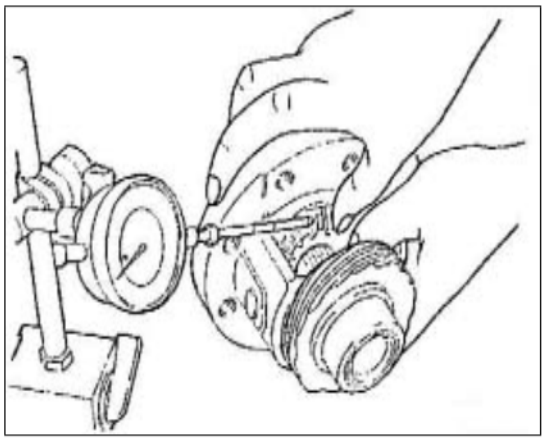


Figure 46

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FIXING THE LOCK PIN

Install the fixing pin to the place as shown in Figure 43.

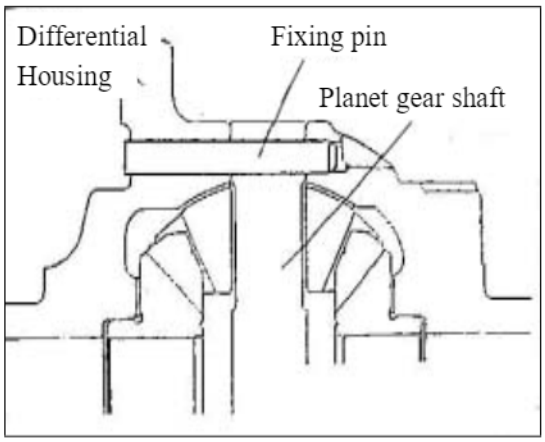


Figure 47

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CLUTCH HOUSING ASSEMBLY

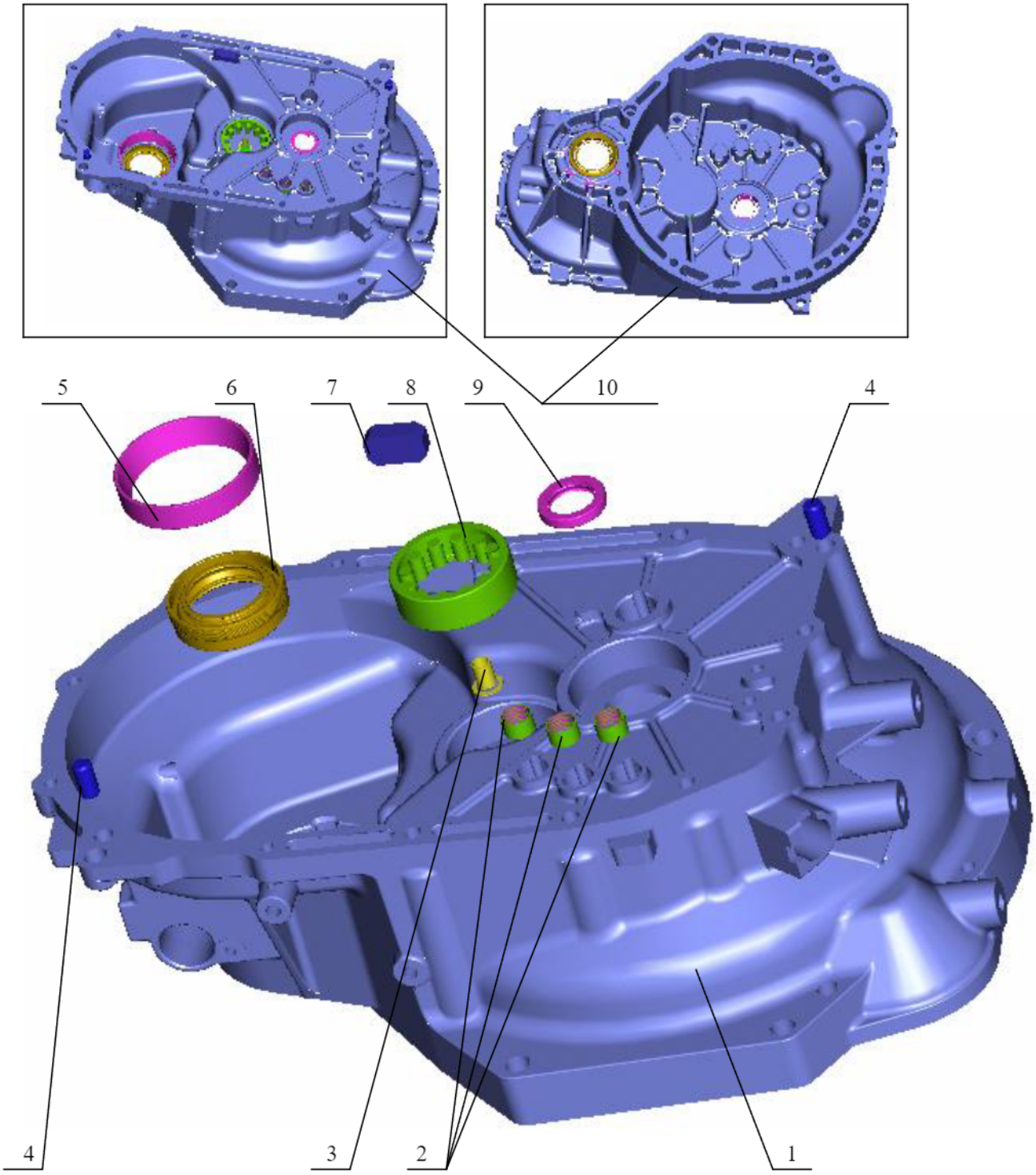


Figure 48

1. Clutch Housing
2. Collar 161410
3. Oil Drain Channel
4. Fixing Pin
5. Front/Rear Differential Bearing Outer Ring
6. Oil Seal – Differential
7. Magnet
8. Front Output Shaft Bearing Outer Ring
9. Oil Seal – Input Shaft
10. Clutch Housing Assembly

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TRANSMISSION HOUSING ASSEMBLY

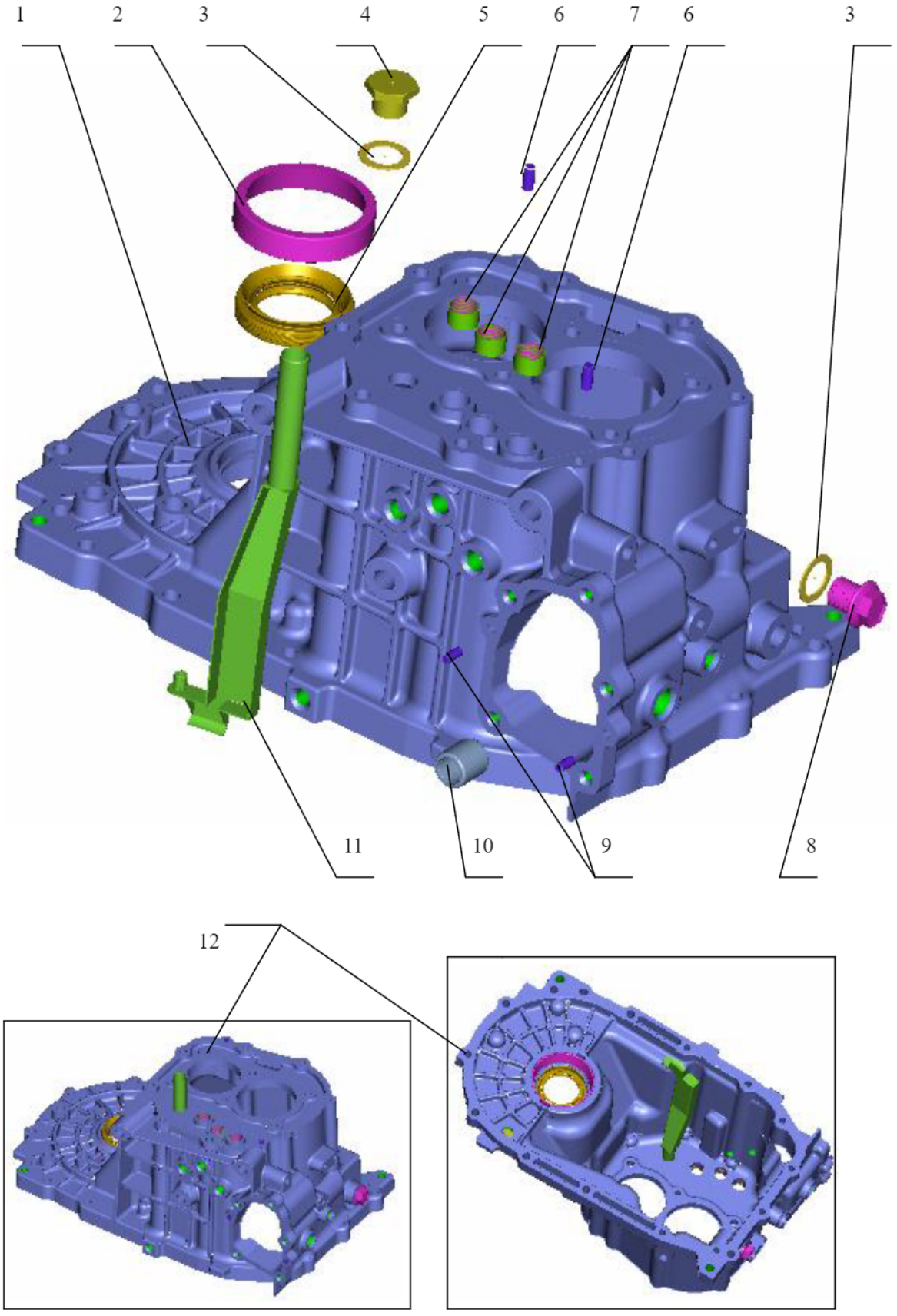


Figure 49

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1. Transmission Housing
2. Differential Bearing Outer Ring
3. Washer – Oil-Limiting/Drain Plug
4. Drain Plug
5. Oil Seal – Differential
6. Fixing Pin – Rear Cover
7. Collar
8. Oil-Limiting Plug
9. Fixing Pin – Gearshift Housing
10. Linear Bearing
11. Oil-Receiving Tube
12. Transmission Housing Assembly

NOTICE FOR INSTALLATION:

Installation of linear bearing

Press the linear bearing in so as for it to be aligned with the housing surface and make sure that the model number is inscribed in the position as shown in Figure 46.



Figure 50

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REAR COVER ASSEMBLY

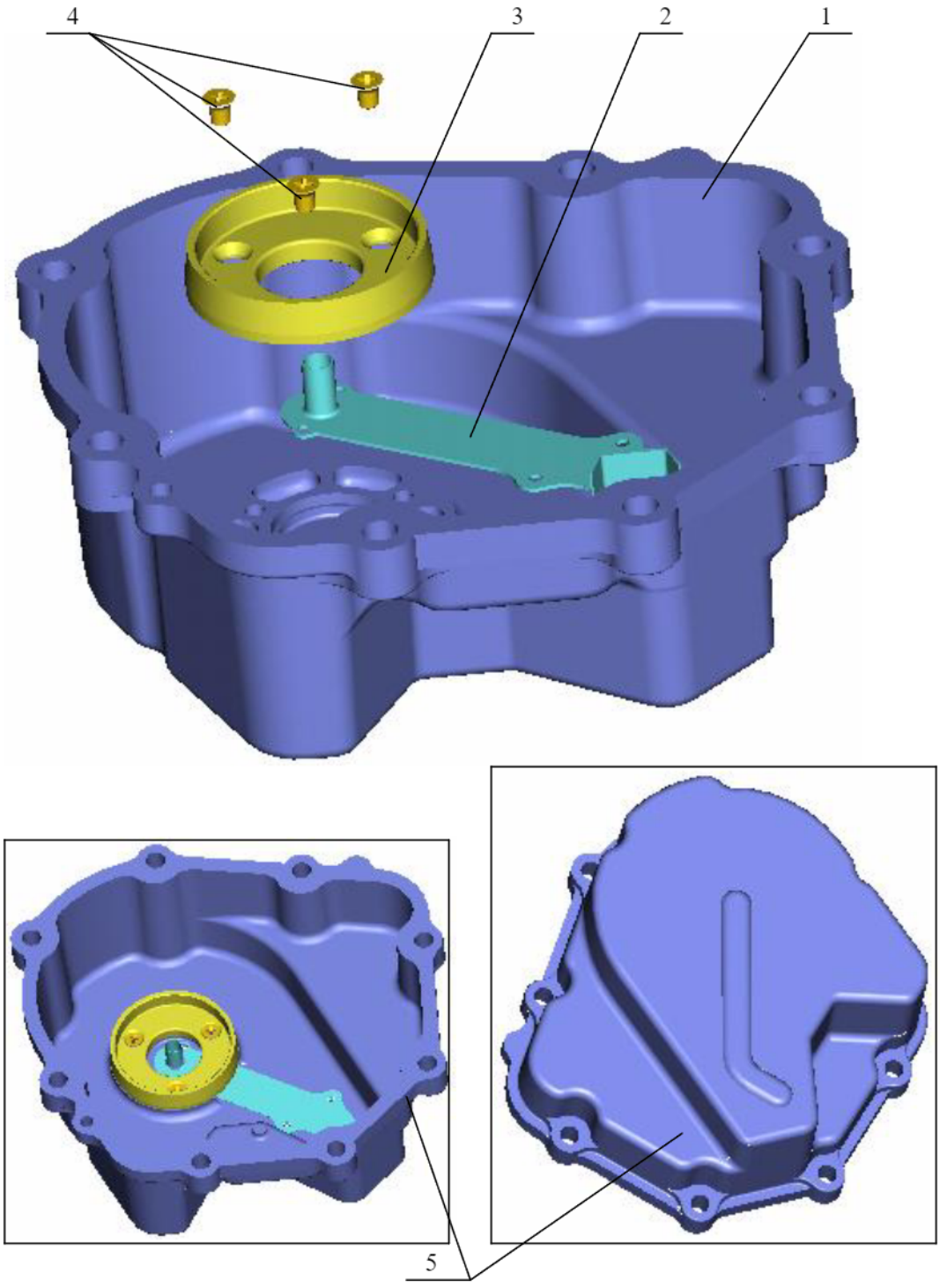


Figure 51

1. Rear Cover
2. Oil Drain Tube for Input Shaft
3. Reverse Synchronizer Cone
4. Screw – Reverse Synchronizer Cone
5. Rear Cover Assembly

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VIII TRANSMISSION ASSEMBLY & NOTICE

The transmission assembly procedure is reverse to its disassembly procedure, and the followings need attention:

1. It is necessary to use Mobilux EP2 (sealant) for the rear cover assembly, clutch housing assembly and gearshift mechanism assembly.
2. Installation of the output shaft adjusting washers:

After fixing the transmission housing, make sure that the bearing outer ring has a full contact with the roller, and the pre-tightening torque of the shaft with the washers is 0.8-1.5N•m after assembly.

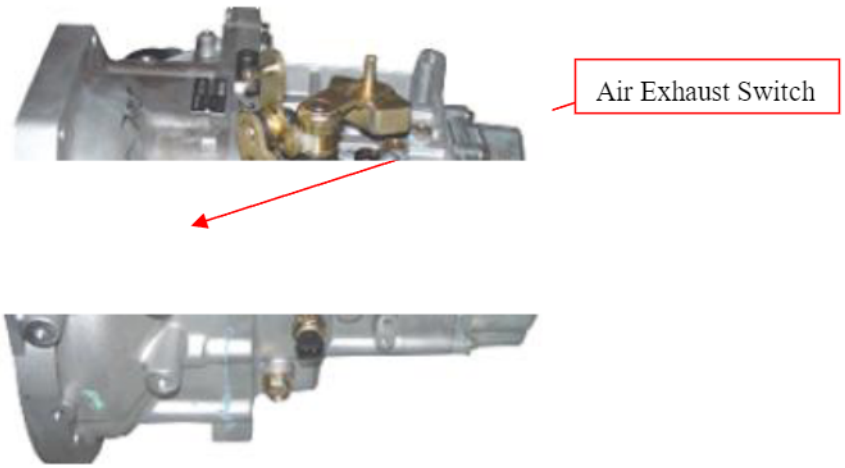
3. Installation of the adjusting washer for input shaft rear bearing:

The thickness range of adjusting washer is A2-0.1≤S2＜A2, in which A2 is the channel width and S2 is the thickness of adjusting washer. Use six M6x1-16 countersunk head screws to fix the rear bearing retainer and their tightening torque is 10.5N•m;

4. When installing the input shaft oil seal and differential oil seal, you shall smear lubricating grease onto their lips and use a special tool to press them into the transmission housing sufficiently.

IX AIR EXHAUST METHOD OF HYDRAULIC CLUTCH

QR519MHA transmission adopts full hydraulic clutch mechanism and thus its air exhaust can be easily done. When implementing air exhaust with regard to an finished vehicle, firstly remove the black plug from the hydraulic release bearing coupler and turn on the switch on it (i.e. rotate it 90 degrees), and then step the clutch pedal to the bottom for some times until all of the air flows out of the hydraulic release bearing coupler. Note: the switch can only be turned off in case of stepping on the clutch pedal to the bottom. If you feel strong resistance force when stepping on the clutch pedal, it is indicated that the air has been exhaust entirely.



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X USE/OPERATION METHOD & NOTICE

1. Employ the Double-Clutching method for upshifting and downshifting. When you shift gear, please depress the clutch pedal to the bottom and rapidly control the gearshift lever after the transmission is free from torque force of the engine.
2. When the vehicle runs downhill or makes a turn, please shift into some low gear and it is not allowed that the vehicle coasts under the condition that the clutch is released.
3. Trip stop is not allowed during the upshifting procedure; otherwise the service life of the synchronizers will be reduced.
4. It is prohibited to start the engine by using synchronizer to force into gear in the condition of flameout & neutral gear; otherwise the service life of the synchronizers will be reduced.
5. No flap (i.e. rapid push and release) is allowed for gear shifting and you shall hold the shift lever all the time during the procedure so as to considerably reduce the sliding friction time of synchronizer locking ring as well as their wear and tear.
6. During the driving, you shall not put your hand onto the gearshift lever; otherwise it will cause the shift forks to be rapidly worn.
7. If the transmission sends out any abnormal sound, it is obviously difficult to control the shift lever, etc. during its use, you shall immediately stop and check the vehicle. You can drive again only after the troubleshooting.

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XI COMMON FAULTS & TROUBLESHOOTING

Fault	Possible cause	Troubleshooting
Excessive or abnormal noise	Damaged input or/and output shaft bearing(s)	Replace the bearing
	Gear tooth faces damaged due to knocking, burr or pit corrosion existing, or poor contact between them.	Repair or replace the gear
	Incorrect gear shaft position and clearance	Check and adjust
	Low oil level, insufficient lubrication	Fill oil to the specified level
	Foreign matter(s) existing in the assembly	Check and remove
Oil leakage	Excessively worn or damaged oil seal(s)	Replacement
	Uneven sealant smearing or damaged seal gasket(s)	Replace the seal gasket(s) or sealant
	Failure to timely recondition junction surface(s) damage due to knocking	Check and repair
	Damaged differential bearing	Replacement
Difficult to implement gear shift	Improper clutch adjustment and incomplete release.	Adjustment
	Improper gearshift transmission system adjustment or movement obstruction occurring	Check and adjust
	Synchronizer ring(s) fails to work	Replacement
Gear jump	Worn synchronizer gear sleeve(s) or tooth cone surface(s) of gear junction	Replace related components
	Improper gearshift transmission system adjustment	Check and adjust
No gear	Loose gearshift transmission system	Overhauling
	Loose gearshift arm of transmission	Repair
Abnormally damaged bearing(s)	Metal impurities contained in transmission oil	Replacement
	Insufficient lubrication or unqualified transmission oil	Replacement
	Using of unqualified bearing(s)	Replacement

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XII LIST OF WEARING PARTS

Number	Name	Quantity
1	Needle roller bearing for 1st/2nd gears	2
2	Needle roller bearing for 3rd/4th/5th gears	3
3	Front input shaft bearing	1
4	Rear input shaft bearing	1
5	Front output shaft cone bearing	1
6	Rear output shaft cone bearing	1
7	Front differential bearing	1
8	Rear differential bearing	1
9	Clutch bearing assembly	1
10	Synchronizer ring for 1st/2nd gears	2
11	Synchronizer ring for 3rd/4th/5th gears	3
12	Seal gasket for clutch and transmission housings	1
13	Seal gasket for gearshift mechanism and transmission housings	1
14	Snap ring for 3rd-4th synchronizer	1
15	Snap ring for 1st-2nd synchronizer	1
16	Snap ring for 5th synchronizer	1
17	Snap ring for reverse fork shaft	1
18	Interlock plate snap ring	3
19	Dust-proof oil seal for release shift fork assembly	1
20	Input shaft oil seal	1
21	Front differential oil seal	1
22	Rear differential oil seal	1
23	Dust-proof oil seal for gearshift shaft	1

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